

LTC 8016/90



Security Systems

EN | **Instruction Manual**
Allegiant Bilinx
Data Interface

BOSCH

Important Safeguards

1. **Read, Follow, and Retain Instructions** - All safety and operating instructions should be read and followed before operating the unit. Retain instructions for future reference.
2. **Heed Warnings** - Adhere to all warnings on the unit and in the operating instructions.
3. **Attachments** - Attachments not recommended by the product manufacturer should not be used, as they may cause hazards.
4. **Installation Cautions** - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury to a person and serious damage to the unit. Use only manufacturer-recommended accessories, or those sold with the product. Mount the unit per the manufacturer's instructions. Appliance and cart combination should be moved with care. Quick stops, excessive force, or uneven surfaces may cause the appliance and cart combination to overturn.
5. **Cleaning** - Unplug the unit from the outlet before cleaning. Follow any instructions provided with the unit. Generally, using a damp cloth for cleaning is sufficient. Do not use liquid cleaners or aerosol cleaners.
6. **Servicing** - Do not attempt to service this unit yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
7. **Damage Requiring Service** - Unplug the unit from the main AC power source and refer servicing to qualified service personnel under the following conditions:
 - When the power supply cord or plug is damaged.
 - If liquid has been spilled or an object has fallen into the unit.
 - If the unit has been exposed to water and/or inclement weather (rain, snow, etc.).
 - If the unit does not operate normally, when following the operating instructions. Adjust only those controls specified in the operating instructions. Improper adjustment of other controls may result in damage, and require extensive work by a qualified technician to restore the unit to normal operation.
 - If the unit has been dropped or the cabinet damaged.
 - If the unit exhibits a distinct change in performance, this indicates that service is needed.
8. **Replacement Parts** - When replacement parts are required, the service technician should use replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electrical shock or other hazards.
9. **Safety Check** - Upon completion of servicing or repairs to the unit, ask the service technician to perform safety checks to ensure proper operating condition.
10. **Power Sources** - Operate the unit only from the type of power source indicated on the label. If unsure of the type of power supply to use, contact your dealer or local power company.
 - For units intended to operate from battery power, refer to the operating instructions.
 - For units intended to operate **with External Power Supplies**, use only the recommended approved power supplies.
 - For units intended to operate with a limited power source, this power source must comply with EN60950. Substitutions may damage the unit or cause fire or shock.
 - For units intended to operate at 24VAC, normal input voltage is **24VAC**. Voltage applied to the unit's power input should not exceed 30VAC. User-supplied wiring, from the 24VAC supply to unit, must be in compliance with electrical codes (Class 2 power levels). Do not ground the 24VAC supply at the terminals or at the unit's power supply terminals.
11. **Coax Grounding** - If an outside cable system is connected to the unit, ensure that the cable system is grounded. U.S.A. models only - Section 810 of the National Electrical Code, ANSI/NFPA No.70, provides information regarding proper grounding of the mount and supporting structure, grounding of the coax to a discharge unit, size of grounding conductors, location of discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
12. **Grounding or Polarization** - This unit may be equipped with a polarized alternating current line plug (a plug with one blade wider than the other). This safety feature allows the plug to fit into the power outlet in only one way. If unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact an electrician to arrange replacement of the obsolete outlet. Do not defeat the safety purpose of the polarized plug. Alternately, this unit may be equipped with a 3-wire grounding plug (a plug with a third pin, for grounding). This safety feature allows the plug to fit into a grounding power outlet only. If unable to insert the plug into the outlet, contact an electrician to arrange replacement of the obsolete outlet. Do not defeat the safety purpose of the grounding plug.
13. **Lightning** - For added protection during a lightning storm, or when this unit is left unattended and unused for long periods of time, unplug the unit from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power line surges.

For Indoor Product

- Water and Moisture** - Do not use this unit near water - for example, in a wet basement, in an unprotected outdoor installation or in any area classified as a wet location.
- Object and Liquid Entry** - Never push objects of any kind into this unit through openings, as they may touch dangerous voltage points or short out parts that could result in a fire or electrical shock. Never spill liquid of any kind on the unit.
- Power Cord and Power Cord Protection** - For units intended to operate with 230VAC, 50Hz, the input and output power cord must comply with the latest versions of IEC Publication 227 or IEC Publication 245.
Power supply cords should be routed so they are not likely to be walked on or pinched. Pay particular attention to location of cords and plugs, convenience receptacles, and the point of exit from the appliance.
- Overloading** - Do not overload outlets and extension cords; this can result in a risk of fire or electrical shock.

For Outdoor Product

Power Lines - An outdoor system should not be located in the vicinity of overhead power lines, electric lights or power circuits, or where it may contact such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching power lines or circuits, as this contact might be fatal. U.S.A. models only - refer to the National Electrical Code Article 820 regarding installation of CATV systems.

For Rack-mount Product

- Ventilation** - This unit should not be placed in a built-in installation or rack, unless proper ventilation is provided, or the manufacturer's instructions have been adhered to. The equipment must not exceed its maximum operating temperature requirements.
- Mechanical Loading** - Mounting of the equipment in a rack shall be such that a hazardous condition is not achieved due to uneven mechanical loading.

Safety Precautions



CAUTION

RISK OF ELECTRIC SHOCK. DO NOT OPEN!



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol indicates the presence of uninsulated "dangerous voltage" within the product's enclosure that can cause an electric shock.



This symbol indicates the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Installation should be performed by qualified service personnel only in accordance with the National Electrical Code or applicable local codes.



Power Disconnect. Units with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON-OFF switch is in the ON position. The power cord is the main power disconnect for all units.

FCC & ICES INFORMATION

(U.S.A. and Canadian Models Only)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules and ICES-003 of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and radiates radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his expense.

Intentional or unintentional changes or modifications, not expressly approved by the party responsible for compliance, shall not be made. Any such changes or modifications could void the user's authority to operate the equipment. If necessary, the user should consult the dealer or an experienced radio/television technician for corrective action. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: [How to Identify and Resolve Radio-TV Interference Problems](#). This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

WARNING: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take adequate measures.

Sécurité

| | | |
|---|--|--|
| | ATTENTION RISQUE D'ÉLECTROCUTION. NE PAS OUVRIR! | |
| ATTENTION : POUR ÉVITER TOUT RISQUE D'ÉLECTROCUTION, N'ESSAYEZ PAS DE RETIRER LE CAPOT (OU LE PANNEAU ARRIÈRE). CET APPAREIL NE CONTIENT AUCUN COMPOSANT SUSCEPTIBLE D'ÊTRE RÉPARÉ PAR L'UTILISATEUR. CONFIEZ LA RÉPARATION DE L'APPAREIL À DU PERSONNEL QUALIFIÉ. | | |
| | Ce symbole signale que le produit renferme une « tension potentiellement dangereuse » non isolée susceptible de provoquer une électrocution. | |
| | Ce symbole invite l'utilisateur à consulter les instructions d'utilisation et d'entretien (dépannage) reprises dans la documentation qui accompagne l'appareil. | |
| | Attention : l'installation doit exclusivement être réalisée par du personnel qualifié, conformément au code national d'électricité américain (NEC) ou au code d'électricité local en vigueur. | |
| | Coupe de l'alimentation. Qu'ils soient pourvus ou non d'un commutateur ON/OFF, tous les appareils reçoivent de l'énergie une fois le cordon branché sur la source d'alimentation. Toutefois, l'appareil ne fonctionne réellement que lorsque le commutateur est réglé sur ON. Le débranchement du cordon d'alimentation permet de couper l'alimentation des appareils. | |

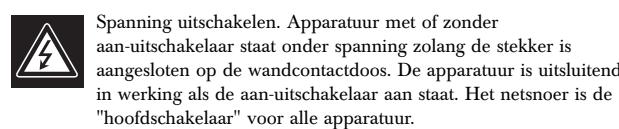
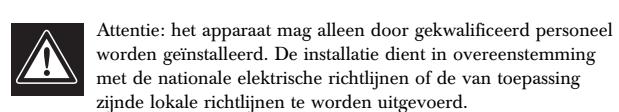
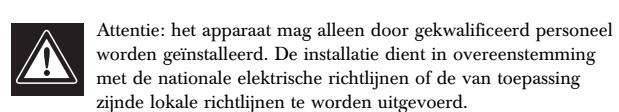
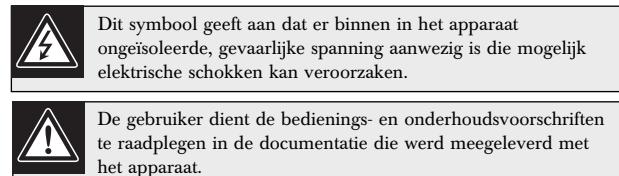
Sicherheitshinweise

| | | |
|---|--|--|
| | VORSICHT ELEKTRISCHE SPANNUNG. NICHT ÖFFNEN! | |
| VORSICHT: UM EINEN ELEKTRISCHEN SCHLAG ZU VERMEIDEN, IST DIE ABDECKUNG (ODER RÜCKSEITE) NICHT ZU ENTFERNEN. ES BEFINDEN SICH KEINE TEILE IN DIESEM BEREICH, DIE VOM BENUTZER GEWARTET WERDEN KÖNNEN. LASSEN SIE WARTUNGSSARBEITEN NUR VON QUALIFIZIERTEM WARTUNGSPERSONAL AUSFÜHREN. | | |
| | Das Symbol macht auf nicht isolierte „gefährliche Spannung“ im Gehäuse aufmerksam. Dies kann zu einem elektrischen Schlag führen. | |
| | Der Benutzer sollte sich ausführlich über Anweisungen für die Bedienung und Instandhaltung (Wartung) in den begleitenden Unterlagen informieren. | |
| | Achtung! Die Installation sollte nur von qualifiziertem Kundendienstpersonal gemäß jeweils zutreffender Elektrovorschriften ausgeführt werden. | |
| | Unterbrechung des Netzanschlusses. Geräte mit oder ohne Netzschalter haben Spannung am Gerät anliegen, sobald der Netzstecker in die Steckdose gesteckt wird. Das Gerät ist jedoch nur betriebsbereit, wenn der Netzschalter (EIN/AUS) auf EIN steht. Wenn das Netzkabel aus der Steckdose gezogen wird, ist die Spannungszuführung zum Gerät vollkommen unterbrochen. | |

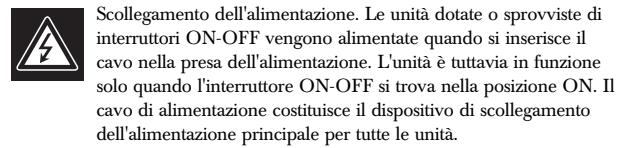
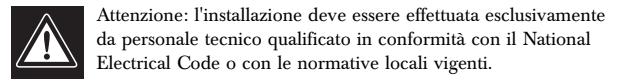
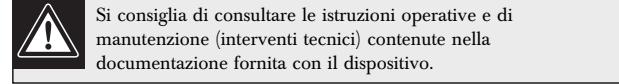
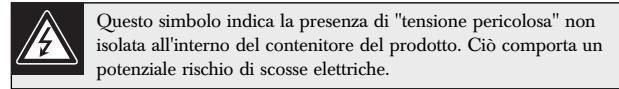
Precauciones de Seguridad

| | | |
|---|--|--|
| | ATTENZIONE PERICOLO DI SCOSSA ELETTRICA. NON APRIRE. | |
| PRECAUCIÓN: PARA DISMINUIR EL RIESGO DE DESCARGA ELÉCTRICA, NO RETIRE LA CUBIERTA (NI LA PARTE POSTERIOR). NO EXISTEN PIEZAS DE RECAMBIO EN EL INTERIOR DEL EQUIPO. EL PERSONAL DE SERVICIO CUALIFICADO SE ENCARGA DE REALIZAR LAS REPARACIONES. | | |
| | Este símbolo indica que existen puntos de tensión peligrosos sin aislamiento dentro de la cubierta de la unidad. Estos puntos pueden constituir un riesgo de descarga eléctrica. | |
| | El usuario debe consultar las instrucciones de funcionamiento y mantenimiento (reparación) en la documentación que se suministra con el aparato. | |
| | Atención: la instalación la debe realizar únicamente personal cualificado de conformidad con el National Electric Code o las normas aplicables en su país. | |
| | Desconexión de la alimentación. Las unidades con o sin interruptores de encendido/apagado reciben alimentación eléctrica siempre que el cable de alimentación esté conectado a la fuente de alimentación. Sin embargo, la unidad sólo funciona cuando el interruptor está en la posición de encendido. El cable de alimentación es la principal fuente de desconexión de todas las unidades. | |

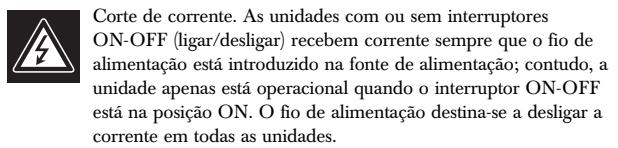
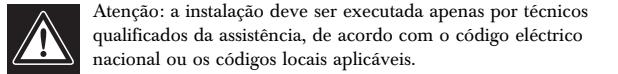
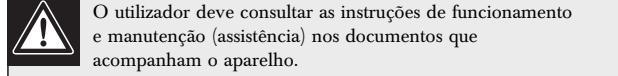
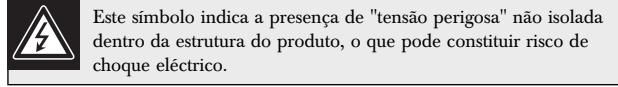
Veiligheidsmaatregelen



Sicurezza



Medidas de Segurança



安全预防措施

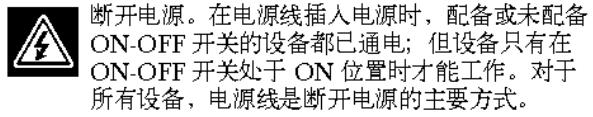
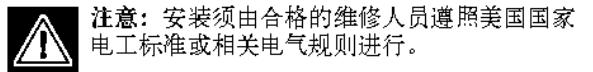
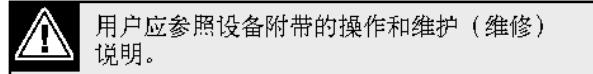
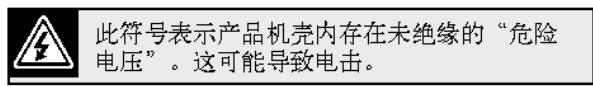


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1.0 UNPACKING

This equipment should be unpacked and handled with care. If an item appears to have been damaged in shipment, notify the shipper.

Verify that all parts shown in the *Parts List* have been included. If any items are missing, notify your Bosch Security Systems Sales or Customer Service Representative.

The original packing carton is the safest container in which to transport the unit. Save it for possible future use.

1.1 Parts List

| Qty | Item |
|-----|---|
| 1 | LTC 8016/90 16-channel data interface unit |
| 2 | AC power cords (one for 120 VAC, and one for 220 - 240 VAC) |
| 1 | 2 m (6 ft) 16-Conductor video ribbon cable |
| 1 | 3 m (10 ft) Data interface cable |
| 1 | 6-Position terminal block with 100Ω terminating resistor |
| 2 | Rack-mount brackets |
| 1 | Offset screwdriver (star & slot ends) |
| 1 | This installation manual |

2.0 SERVICE

If the unit needs repair, contact the nearest Bosch Security Systems Service Center for authorization to return and shipping instructions.

Service Centers

USA

Phone: 800-366-2283 or 717-735-6638
Fax: 800-366-1329 or 717-735-6639

CCTV Spare Parts

Phone: 800-894-5215 or 408-956-3853 or 3854
Fax: 408-957-3198
E-mail: BoschCCTVparts@ca.slr.com

Canada

Phone: 514-738-2434

Europe, Middle East & Asia Pacific Region

Phone: 32-1-440-0711

For additional information, see

www.boschsecurity.com.

3.0 DESCRIPTION

3.1 General

The LTC 8016 Allegiant Bilinx Data Interface Unit is an accessory device used to provide two-way communication between a controller and up to 16 Bilinx-capable cameras. Full control of pan/tilt/zoom functions and processing of camera alarm/events are supported. The Interface unit is especially suited for use with the Allegiant Series Matrix Switcher/Controllers.

When connected to a head-end device generating biphasic control code, single direction communication is available for control of pan/tilt/zoom, auxiliaries and pre-positions of Bilinx-compatible cameras.

Camera setup is simplified when the Interface Unit is used with the AutoDome Series of P/T/Z cameras, since programming of the dome camera address is no longer required. In addition to conventional CCTV coax, configuration solutions are available for other compatible video/data transmission products, such as unshielded twisted pair (UTP) products and fiber optic links.

3.2 Power

| Model No. | Rated Voltage | Voltage Range | Nominal Power |
|-------------|------------------------|---------------|---------------|
| LTC 8016/90 | 120 /230 VAC, 50/60 Hz | 105 to 253 | 15 W |

3.3 Compatibility Information

Although any device generating a standard video signal can be connected to the Allegiant Bilinx Data Interface Unit, it is only capable of **communicating** with devices that are compatible with Bilinx technology.

If the unit is being connected to any of the following devices, they must meet the following minimum specifications:

- Allegiant Series Switcher/Controller firmware 8.6 (released May, 2004) or later is required if using the Allegiant data interface connection.
- AutoDome Series Camera models with firmware 5.11 (released October, 2003) or later is required.
- Dinion Series Cameras that were manufactured after March 2004.

- Any **Dinion^{XF}** Series Cameras manufactured after April 2004.
- Any controller device generating **Allegiant** biphasic P/T/Z control code protocol.

4.0 INSTALLATION

The Allegiant Bilinx Data Interface Unit should be installed in a suitable indoor environment free from excessive dust, moisture and temperature extremes.

Setup of the Allegiant Bilinx Data Interface Unit is quick and easy. Follow the steps listed below. If a particular step does not apply to your configuration, proceed to the next step.

4.1 Enclosure Mounting and Location Selection

The Allegiant Bilinx Data Interface Unit is supplied in a desktop enclosure. If the unit is to be installed into a standard EIA 19-inch rack, remove the four (4) rubber footpads on the bottom. Use the supplied offset screwdriver to remove two (2) star head screws located on each side near the front of the unit. Then attach the supplied rack mounting brackets to the unit. The unit can then be installed into the rack with user-supplied fastening hardware.

Since video signal connections need to be made between the Interface Unit and the main system control unit, the physical distance between them should be taken into consideration. Connection between the LTC 8016 and the control device is via a 34-pin video ribbon cable. A 2 m (6 ft) video ribbon cable is supplied, but if the controller does not support this type of video connection, optional accessory products are required. If unsure of the available connection methods, refer to the *Section VIDEO CONNECTIONS TO CONTROLLER UNIT* found later in the manual.

4.2 Connections to AC Power

Connect the appropriate power cord to the AC main source. If the cord termination is not suitable for connection to the main AC supply, modification to the cord, or a locally sourced cord with the correct end style is required.

4.3 Camera Video Connections

There are two banks of BNC inputs on the rear panel of the Interface Unit: 1-8 and 9-16. The inputs are designed to accept standard composite video signals, and are fixed at 75Ω termination. The unit accepts NTSC or PAL video signals. Both Bilinx and non-Bilinx cameras can be connected to a bank of inputs, but at least one Bilinx camera must be connected to the bank in use, or it will enter a search mode and cause a periodic video disturbance. If more than 8 cameras are connected to the unit, both banks must have at least one Bilinx camera connected to it.

**BILINX TECHNOLOGY PROVIDES
ADJUSTMENT AND CONFIGURATION
CAPABILITIES FOR COMPATIBLE CAMERAS
FROM THE CONTROLLER LOCATION.
THERE'S NO NEED TO PRE-PROGRAM
CAMERA OPTIONS OR CONFIGURE
CAMERA ADDRESSES.**



Coax communication must not exceed 300 m (1000 ft) when using RG-59U grade CCTV coax, or 600 m (2000 ft) when using RG-6 or RG-11 grade coax.

There are other types of video transmission devices that are compatible with Bilinx technology. The LTC 4630 & LTC 4631 Series can transmit Bilinx video signals via fiber optics, up to a maximum of 600 m (2000 ft). It is also possible to use CAT-5 grade cable connected to Balun devices, to achieve distances of up to 225 m (750 ft).

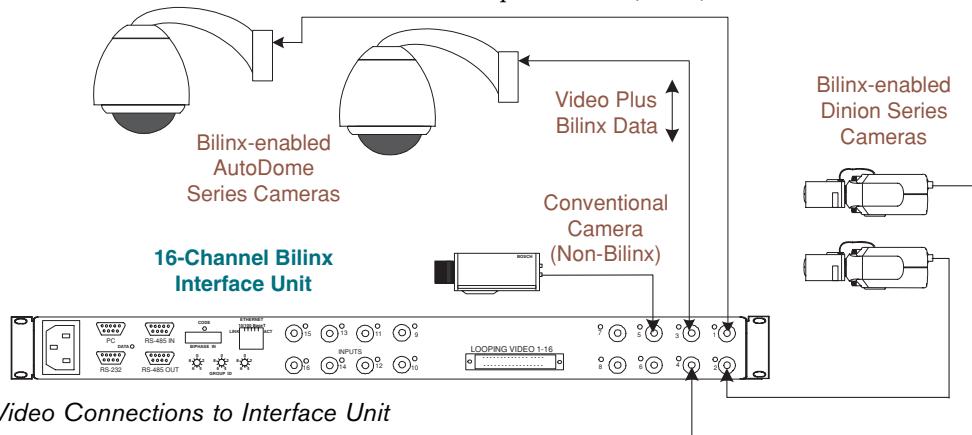


Figure 1 Typical Video Connections to Interface Unit

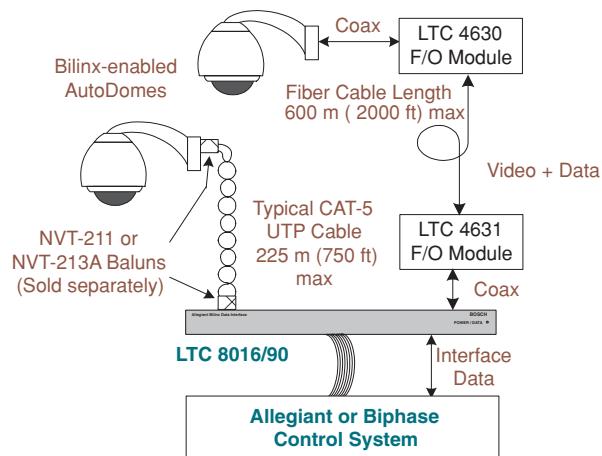


Figure 2 Interface Unit Used with Other Video Transmission Technologies



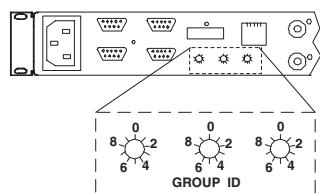
NOTE: The video signal and Bilinx control data require unobstructed two-way communication. Do not place **active** video devices in the coax line, because it will block the control data signals.

Passive devices, such as ground loop isolation transformers or other devices specifically designed to support Bilinx communication, can be placed in the coax line. In some configurations, it may be possible to connect an active device **after** the video passes through the head-end control unit. For sample applications, refer to the *Typical Configuration Diagrams Section* found later in this manual.

When an operating camera is connected to the Interface Unit, the video channel LED illuminates GREEN to indicate the presence of an acceptable video signal. As Bilinx control data is sent to or received from Bilinx-enabled cameras, the respective channel LED flashes accordingly.

4.4 Group ID Number

The rear panel of the Interface Unit contains a set of 3 rotary switches, as shown below. Use the straight slot side of the supplied offset screwdriver to set the switches to the necessary value.



These switches are used to identify the group of cameras to be connected to the Interface Unit. Each group consists of 16 cameras in consecutive order, and the group must always end at an exact multiple of 16. For example, the lowest camera group range is from 1 to 16. The next group range is from 17 to 32, etc., up to the last group (camera range of 9985 to 9999). If multiple Interface Units are used in the same system, each Group ID number must be unique.

The following chart summarizes the supported switch settings:

| Switch Setting | Use |
|----------------|--|
| 001 to 625 | Valid switch settings used for Allegiant and biphase controller interfaces |
| 901 to 931 | Settings used in Allegiant interface mode to terminate RS-485 data line |
| 000 | Reserved; setting is used during firmware upgrades |
| 900 | Reserved; setting is used by the factory |

When the Interface Unit is connected to an Allegiant system using the Allegiant data interface protocol, the Group ID switches should always be set to correspond to the **physical** camera numbers used in the system. For control systems that use the biphase data interface, the switches should be set to correspond to the controller's **logical** camera configuration.

After a change is made in a large Allegiant system with multiple Interface Units, 30 seconds may be required before the new settings take effect in all Interface Units.

Setting 900 is reserved for factory use. If the Interface Unit is inadvertently set to this value for more than 5 seconds before being set to its correct value, a power off/on may be required for the unit to return to its normal operating mode.

Select the step below that applies to your specific system configuration.

4.4.1 Group ID Settings When Using Allegiant RS-232 or RS-485 Protocol

When using the Allegiant data interface protocol, the Group ID must be set to correspond to a block of 16 **physical** camera numbers between 1-16 and 481-496. Since each block consists of 16 numbers, the Group ID number for these cameras ranges from 1 to 31. Select a Group ID number that does not duplicate another Group ID number.

A special case exists when multiple units are cascaded using the Interface Unit's RS-485 data connection (explained later). The left-most Group ID switch on the last unit must be set to **9**, to terminate the data link.

For example, if a total of 32 Bilinx-enabled cameras will be connected using the range of Allegiant inputs 17-32 and 49-64, one of the Interface Units must be set to Group ID **002**, and the other to **004**. If the Interface Unit for cameras 49-64 is the last unit connected at the end of the RS-485 data link, its actual Group ID should be set to **904**.

If only one Interface Unit will be connected to support Bilinx cameras on inputs 1 to 16, no change is required from the Interface Unit's default setting of **901**.

Set the Group ID switches using the supplied screwdriver, as follows:

| Group ID Switches ¹ | Camera Number Range | Group ID Switches ¹ | Camera Number Range |
|--------------------------------|---------------------|--------------------------------|---------------------|
| 001 | 1 to 16 | 017 | 257 to 272 |
| 002 | 17 to 32 | 018 | 273 to 288 |
| 003 | 33 to 48 | 019 | 289 to 304 |
| 004 | 49 to 64 | 020 | 305 to 320 |
| 005 | 65 to 80 | 021 | 321 to 336 |
| 006 | 81 to 96 | 022 | 337 to 352 |
| 007 | 97 to 112 | 023 | 353 to 368 |
| 008 | 113 to 128 | 024 | 369 to 384 |
| 009 | 129 to 144 | 025 | 385 to 400 |
| 010 | 145 to 160 | 026 | 401 to 416 |
| 011 | 161 to 176 | 027 | 417 to 432 |
| 012 | 177 to 192 | 028 | 433 to 448 |
| 013 | 193 to 208 | 029 | 449 to 464 |
| 014 | 209 to 224 | 030 | 465 to 480 |
| 015 | 225 to 240 | 031 | 481 to 496 |
| 016 | 241 to 256 | | |

¹The last unit must be set to terminate the RS-485 data line, by setting the left-most Group ID switch to **9**.

If the Allegiant's camera number assignments will be changed (using the Allegiant Master Control Software package) to use **logical** camera numbers other than the default physical input numbers, Interface Units with Group ID ranging from 1 to 31 are automatically notified of the new settings, by the Allegiant system. This allows the system to support random camera numbers.

NOTE: If the Allegiant's logical camera number assignments are changed as described above, then downloaded into the Allegiant CPU, the update process may take up to 30 seconds. Camera control functions will not be available until this update has completed.

4.4.2 Switch Settings When Interfacing to Biphase Controller Devices

When using a biphase data interface, the Group ID switches must be set to correspond to a block of 16 **logical** camera numbers between 1-16 and 9985-9999. Since each block consists of 16 numbers, the Group ID number for these cameras range from 1 to 625. The Group ID number selected must not duplicate Group ID numbers already used.

The Interface Unit is set to **901** by default, and no change is required when only one Interface Unit is used in a system for cameras 1 to 16. Otherwise, use the supplied screwdriver to set the Group ID to correspond to the logical camera number range shown in the table below. For larger systems, refer to *APPENDIX A* for additional Group ID switch settings.

| Group ID Switches | Camera Number Range | Group ID Switches | Camera Number Range | Group ID Switches | Camera Number Range |
|-------------------|---------------------|-------------------|---------------------|-------------------|---------------------|
| 001 | 1 to 16 | 023 | 353 to 368 | 045 | 705 to 720 |
| 002 | 17 to 32 | 024 | 369 to 384 | 046 | 721 to 736 |
| 003 | 33 to 48 | 025 | 385 to 400 | 047 | 737 to 752 |
| 004 | 49 to 64 | 026 | 401 to 416 | 048 | 753 to 768 |
| 005 | 65 to 80 | 027 | 417 to 432 | 049 | 769 to 784 |
| 006 | 81 to 96 | 028 | 433 to 448 | 050 | 785 to 800 |
| 007 | 97 to 112 | 029 | 449 to 464 | 051 | 801 to 816 |
| 008 | 113 to 128 | 030 | 465 to 480 | 052 | 817 to 832 |
| 009 | 129 to 144 | 031 | 481 to 496 | 053 | 833 to 848 |
| 010 | 145 to 160 | 032 | 497 to 512 | 054 | 849 to 864 |
| 011 | 161 to 176 | 033 | 513 to 528 | 055 | 865 to 880 |
| 012 | 177 to 192 | 034 | 529 to 544 | 056 | 881 to 896 |
| 013 | 193 to 208 | 035 | 545 to 560 | 057 | 897 to 912 |
| 014 | 209 to 224 | 036 | 561 to 576 | 058 | 913 to 928 |
| 015 | 225 to 240 | 037 | 577 to 592 | 059 | 929 to 944 |
| 016 | 241 to 256 | 038 | 593 to 608 | 060 | 945 to 960 |
| 017 | 257 to 272 | 039 | 609 to 624 | 061 | 961 to 976 |
| 018 | 273 to 288 | 040 | 625 to 640 | 062 | 977 to 992 |
| 019 | 289 to 304 | 041 | 641 to 656 | 063 | 993 to 1008 |
| 020 | 305 to 320 | 042 | 657 to 672 | 064 | 1009 to 1024 |
| 021 | 321 to 336 | 043 | 673 to 688 | | |
| 022 | 337 to 352 | 044 | 689 to 704 | | |

4.5 Video Connections to the Controller Unit

Video connections from the Interface Unit vary based on the type of video connections available on the controller, and the distance between the controller and the Interface Unit. Review the options in the table below to determine which best suits your configuration, then follow the appropriate section below:

| Controller Type | Configuration Method | Max Separation Distance |
|--|---|---|
| Allegiant Series LTC 8200, LTC 8300, LTC 8600, LTC 8800, and LTC 8900, DESA ^{XL} DVR Series | Use 16-channel video ribbon cable, supplied with the LTC 8016 | 2 m (6 ft) |
| Any controller system using BNC connectors | Use the optional LTC 8508/01 16-channel ribbon-to-BNC video cable | 1 m (3 ft) |
| Any controller system using BNC connectors | Use the 16-channel video ribbon cable supplied with the LTC 8016, to the optional LTC 8807/00 panel, then BNC to user-supplied video link | Distance is limited only by the type of user-supplied video transmission link |

Video output signals from the Interface Unit are expecting to see a standard 75Ω termination. Unless a video input will be used to loop out to another device, make sure that the video inputs on the control unit are properly set to provide 75Ω video termination. For details on setting the video terminations of your controller device, refer to the device's installation instructions.

The video connections from the Interface Unit MUST be kept in consecutive order, and the group must always end at an exact multiple of 16. For example, the lowest camera group range is from 1 to 16. The next group range is from 17 to 32, and so on, up to the last group, that corresponds to the camera range of 9985 to 9999. Always make video connections to the controller following these guidelines.

! Certain controller units support video looping inputs. Do not connect a camera to the looping output of a video channel on the control unit that is already being used by the Interface Unit. Smeared or double video images will result. Alternate video connections available on video control systems should only be used for looping video signals out to some other external control system device or monitor.

4.5.1 Video Connections to Products Supporting Ribbon Cable Interface

Video connections from the Interface Unit to Allegiant models LTC 8200, LTC 8300, LTC 8600, LTC 8800, LTC 8900, and the DESA^{XL} Series Digital Video Recorders use the supplied video ribbon cable. Noting the video ribbon cable connector's orientation and alignment tab, connect one end of the supplied 16-channel ribbon cable to the back of the Interface Unit. Place the other end into the connector on the rear panel of the controller unit that corresponds to the **physical** camera number range previously determined by the Group ID switch settings (described above). For example, if the Group ID switches have been set to 003, the video ribbon cable should be installed into the Allegiant connector corresponding to video inputs 33 to 48.

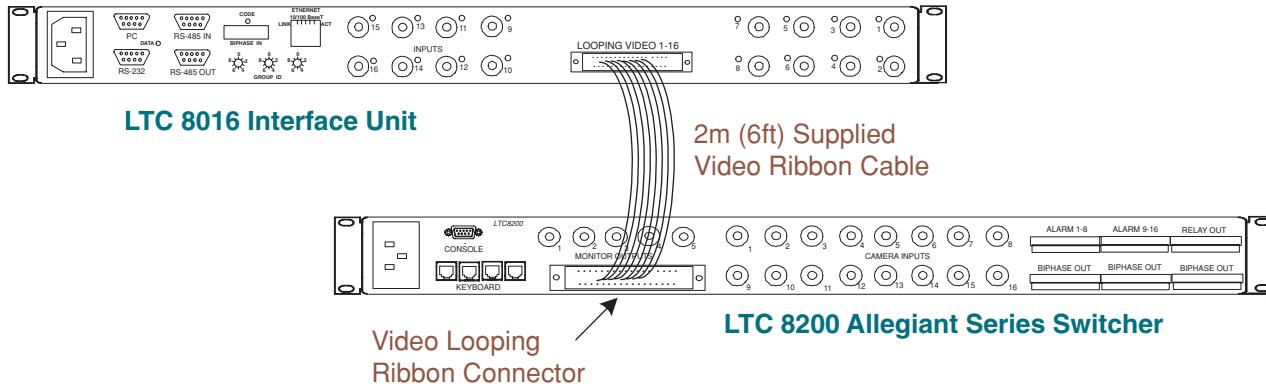


Figure 3 Interface Unit Video Connections to a Typical Allegiant System

4.5.2 Video Connections to Products via LTC 8508/01 Ribbon-to-BNC Cable

Video connections to Allegiant models LTC 8100, LTC 8500, and other products using BNC video connectors, can utilize the 1 m (3 ft) 16-channel LTC 8508/01 Ribbon-to-BNC cable (sold separately). One LTC 8508 cable is required for each Interface Unit being installed. Noting the connector orientation and alignment tab, connect the ribbon connector end of the cable to the Interface Unit. Attach the BNC

ends to the video inputs on the rear panel of the controller that corresponds to the **physical** camera number range previously determined by the Group ID switch settings above. For example, if the Group ID switches have been set to 001, the BNC ends of the video ribbon cable should be installed in the controller's video inputs 1 to 16. For your convenience, the BNC ends are marked with the video channel number.

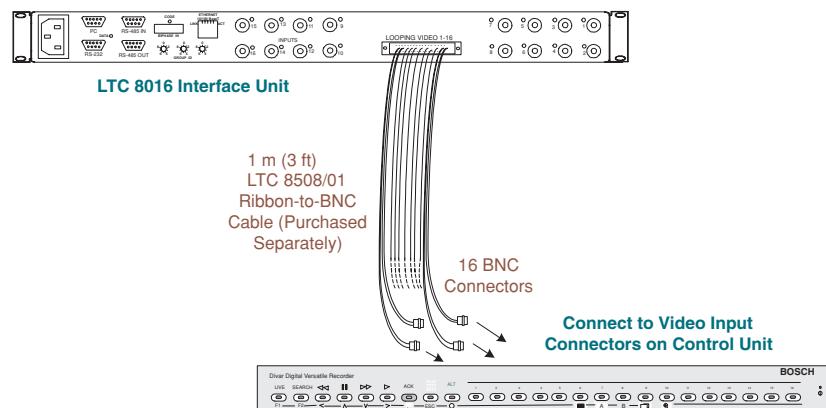


Figure 4 Typical Video Connections to Divar Series DVR Control Units

4.5.3 Video Connections to Products via LTC 8807/00 Video Interconnect Panel

If using a rack-mountable BNC patch panel, or if the Interface Unit will be remoted some distance from the controller unit, an LTC 8807/00 Video Interconnect Panel (sold separately) can be used for video connections to a controller. Each LTC 8807 panel can be used with up to two Interface Units, supporting a maximum of 32 cameras. Connect the supplied video ribbon cable from the Interface Unit into the upper connector on the back of the LTC 8807 for the first block of 16 cameras. The lower connector is only used if a second Interface Unit will be connected, providing a second block of 16 cameras.

User-supplied coax jumper cables are required to complete the video connections between the LTC 8807 panel and the BNC connectors on the controller unit. Attach the coax to the video inputs on the rear panel of the controller bay, that correspond to the **physical** camera number range previously determined by the Group ID switch settings above. For example, if the Group ID switches have been set to 001, the coax cables should be installed into the controller's video inputs 1 to 16.

If the control unit will be located at a remote distance from the Interface Unit, standard practices for video signal transmission, and the associated data interface, should be used (more details provided in the next section).

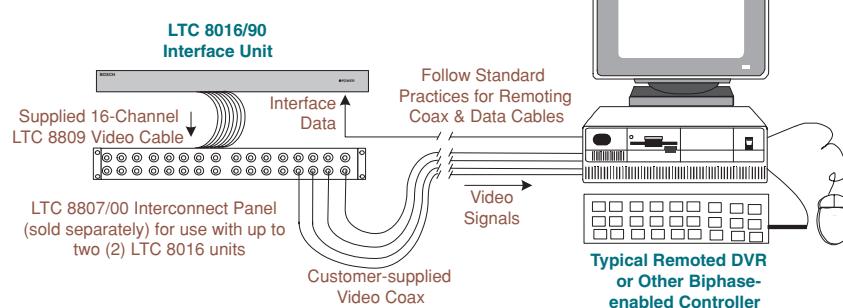


Figure 5 Video Connections to Control System Located at Remote Site

4.6 Allegiant Series Switcher Data Interface

4.6.1 Allegiant Interface Configurations

When using the Allegiant data interface protocol, up to 31 Interface Units can be connected to a single large Allegiant system. In this configuration, bi-directional Bilinx communication to physical cameras ranging from 1 to 496 is supported. In very large systems, additional units can be interfaced to the Allegiant via biphasic data connection.

When connecting to an Allegiant system, select a data port on the main Allegiant CPU that will be used to communicate with the Interface Unit. The Interface Unit provides separate interface connectors so it is able to support both RS-232 and RS-485 Allegiant interfaces.



Only one port on the Interface Unit can be used at a time. Connecting data cables to more than one port on the Interface Unit simultaneously could result in non-operation.

4.6.1.1 Allegiant Interface Port Selection

Based on the Allegiant model being used, select an available CPU port from the table below. Note that it is not possible to connect the Interface Unit cable to a Console port provided by an Allegiant LTC 8712 Series Port Expander accessory unit.

| Allegiant Model | Supported Ports | | | | |
|-----------------|-----------------|---------|--------|------|------|
| | CONSOLE | PRINTER | ALARM1 | COM1 | COM2 |
| LTC 8100 | YES | NO | NO | NO | NO |
| LTC 8200 | YES | NO | NO | NO | NO |
| LTC 8300 | YES | YES | NO | NO | NO |
| LTC 8500 | YES | YES | YES | NO | NO |
| LTC 8600 | YES | YES | YES | YES | YES |
| LTC 8800 | YES | YES | YES | YES | YES |
| LTC 8900 | YES | YES | YES | YES | YES |



The ALARM port requires a special cable pinout. DO NOT USE the supplied cable for this port connection. A cable must be constructed by the installer, per the pinouts shown in the *CONNECTOR & CABLE PINOUTS* Section.

4.6.1.2 Setting the Allegiant System to Use Bilinx Communication Mode

Using Allegiant Keyboard User Function 39, a system keyboard operator with Level 1 Priority must configure the Allegiant to enable the communication interface on the selected port.

IntuiKey Series Keyboard:

From the main Allegiant screen, navigate to the **User Functions** menu screen, then press [Enter User Command]. Key in 39, then press [Enter].

LTC 8555 or LTC 8550 Series Keyboard:

Press [USER], key in 39, then press [Enter].

The monitor's on-screen text will indicate the current configuration mode, such as **NO DIU OPERATION** (i.e., meaning **No Data Interface Unit Operation**) on a non-configured system. Use the keyboard joystick up/down to navigate through the available port options. Enter the operator password when prompted, and press [Enter] to select the port currently shown.

The port is now configured with the proper baud rate and handshake settings to communicate with the Interface Unit.

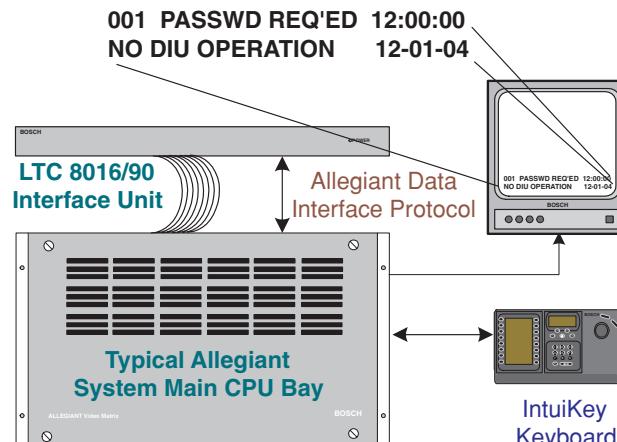


Figure 6 Allegiant On-screen Setup Procedure for Bilinx Operation



If the on-screen option reads **No CTS Operation**, the CPU firmware version is older than the revision needed for compatibility with Bilinx communication. On Allegiant systems sold after 1995, CPU upgrades can be done from an external PC using a software download approach. Older systems (i.e., having CPU modules with a single 8-position dip switch) can be upgraded by replacing the CPU module. Contact the nearest Bosch Security Systems Sales Representative or Tech Support specialist for additional details on Allegiant CPU upgrades.

A system reset is required to complete the process. Either use **Keyboard User Function 15**, or power off/on the main Allegiant CPU bay. The Allegiant is then ready to communicate with the Interface Unit.

4.6.2 Allegiant Data Connections Using a Single Interface Unit

Use the supplied 3 m (10 ft) data interface cable to connect the Allegiant to the Interface Unit. Connect one end of the cable to the Allegiant port selected in the previous section, and the other end of the cable to the Interface Unit port, according to the following guide:

If an Allegiant CONSOLE, PRINTER, or ALARM port is being used, connect the cable to the **RS-232** connector on the rear of the Interface Unit.

If an Allegiant COM1 or COM2 port is being used, connect the cable to the **RS-485 IN** connector on the rear of the Interface Unit.

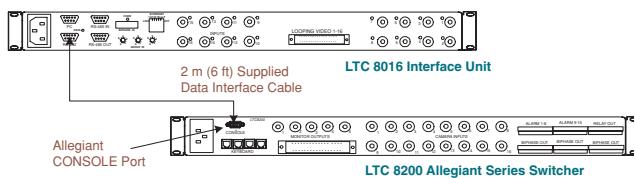


Figure 7 Data Interface Connection Detail When Using Large Model Allegiant System

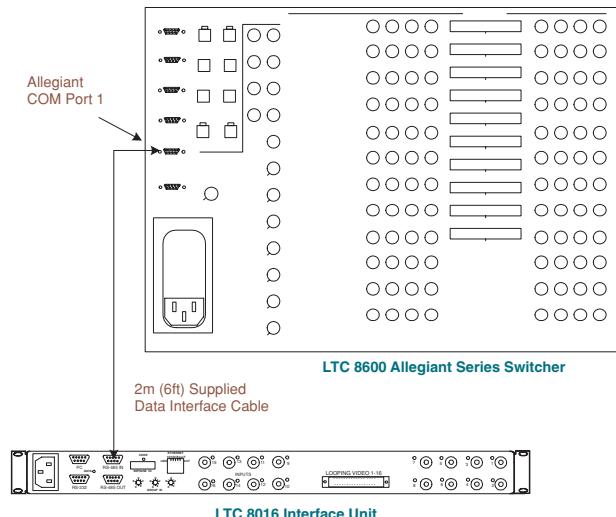


Figure 8 Data Interface Connection Detail When Using Large Model Allegiant System

Once a connection is established between the Interface Unit and the Allegiant, an automatic download of the Allegiant's **physical camera-to-logical camera** table is sent to the Interface Unit. Prior to this update, the front panel LED on the Interface Unit flashes to indicate that it is waiting for the information to be received. Once the LED changes to a steady condition, configuration is complete.

4.6.3 Allegiant Data Connections Using Multiple Interface Units

Up to 31 units can be connected to a single Allegiant switcher, using a **daisychain** data interface configuration. This provides support for up to 496 Bilinx cameras. Since the same data is being sent to all Interface Units in the chain, it does not matter what order is used when connecting the data lines between the units. Simply connect the supplied 3 m (10 ft) data interface cable from the **RS-485 OUT** connector of one Interface Unit to the **RS-485 IN** of the next unit.

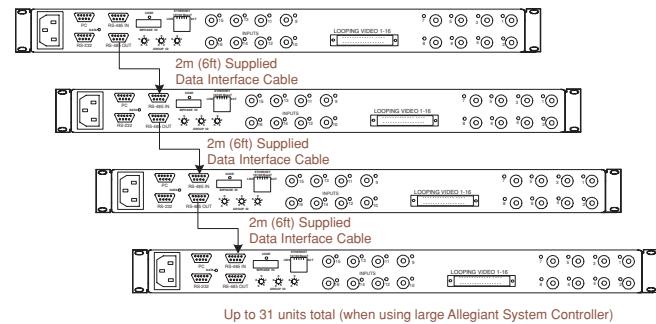
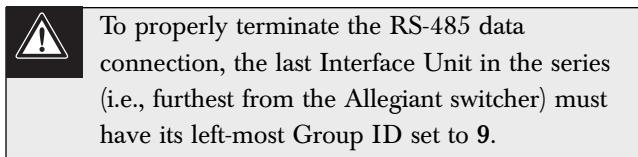


Figure 9 Data Interface Connection Detail When Using Multiple Interface Units

Daisychain configurations can only be used when the data connection from the controller to the Interface Unit utilizes either an **RS-232** or **RS-485** data port. Do not use this method if the data connection from a controller uses the biphasic data port.

4.7 Data Connection to a Biphasic Generating Device

The Interface Unit is designed to support data connections from other head-end controller devices with the ability to generate Bosch Security Systems biphasic control data. Since biphasic protocol is a single direction communication format, control of P/T/Z functions, auxiliaries, and pre-positions are fully supported, but it is not possible to receive any data back from the camera site. This means that reporting of alarms or other camera site-related events is not possible with a biphasic data connection.

To connect the Interface Unit to a biphasic controller, attach the biphasic data cable from the controller to the biphasic input terminal block on the rear panel of the Interface Unit. Use the straight slot end of the supplied offset screwdriver to tighten the terminal block screws. The Interface Unit supports **daisychain** biphasic

connections to simplify connection to multiple Interface Units. If this type of connection is necessary, remove the termination resistor from the biphasic output terminal block, and connect another user-supplied shielded twisted pair cable from the output of one Interface Unit to the input of another.

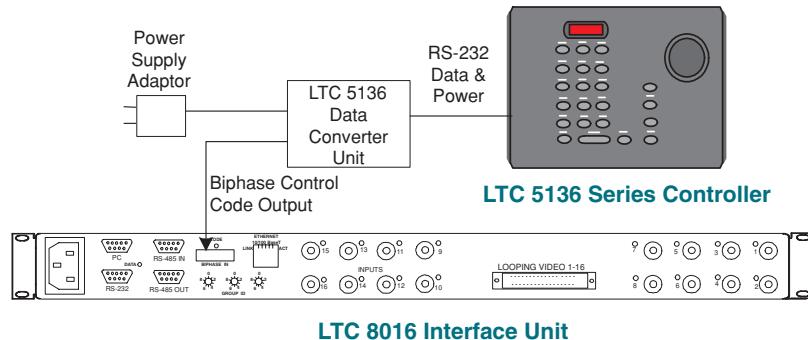


Figure 10 Biphasic Data Interface Connection Detail

4.8 Data Connections Using Biphasic RS-232 Protocol

The Interface Unit can be connected directly to Bosch Security System products that generate biphasic control data in RS-232 format. These products include the PC-based DiBos, and DESA Series Digital Video Recorders.

Typically, the RS-232 interface of the controller first connects to an optional LTC 8786 or LTC 8780 Data Converter accessory unit. The outputs from the Data Converter Unit can be connected to P/T/Z cameras or other devices designed to receive standard biphasic code protocol.

Although the LTC 8016 is capable of receiving standard biphasic protocol, it can also directly accept biphasic in an RS-232 format. Any controller capable

of generating biphasic data in an RS-232 format operating at 9600, 19200, 57600, or 115200 baud, with 8 data bits, no parity, and 1 stop bit, can be connected to the Interface Unit.

When RS-232 communication is first established, the Interface Unit may require 3 to 5 seconds to automatically detect and adjust to the controller's baud rate. No control of cameras is possible until this process is completed.

Refer to the portion of the next section that is applicable to your configuration, based on the controller product being connected to the Interface Unit.

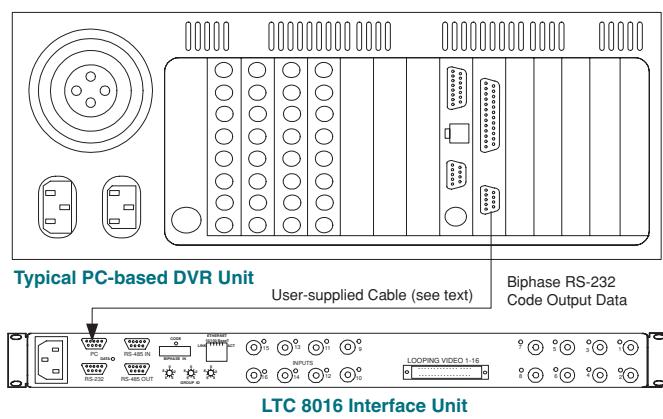


Figure 11 Biphasic RS-232 Data Interface Connection Detail

4.8.1 Connecting to DiBos Digital Video Recorders

A RS-232 grade data cable (not supplied) is required to connect the DiBos DVR to the LTC 8016 Interface Unit. A Bosch Security System's S1385 cable can be purchased separately, or one can be constructed based on the pinouts in the *CONNECTOR AND CABLE PINOUTS Section*.

Connect one end of the RS-232 data cable to an available COM port on the DiBos, and the other end of the cable to the PC port on the Interface Unit. The DiBos software must now be configured to send the biphasic PTZ commands out of its COM2 port (rather than the default COM1 port). For details on this configuration option, refer to the appropriate section in the DiBos instruction manual.

4.8.2 Connecting to DESA and DESA-8 Series Digital Video Recorders

A RS-232 grade data cable (not supplied) is required to connect the DESA DVR to the LTC 8016 Interface Unit. A Bosch Security System's S1385 cable can be purchased separately, or one can be constructed based on the pinouts in the *CONNECTOR AND CABLE PINOUTS Section*.

Connect one end of the RS-232 data cable to the COM2 port on the DESA, and the other end of the cable to the PC port on the Interface Unit. The DESA software must now be configured to send the biphasic PTZ commands out of its COM2 port (rather than the default COM1 port). For details on this configuration option, refer to the appropriate section in the DESA instruction manual.

4.8.3 Connecting to DESA^{XL} Series Digital Video Recorders

A user-supplied RS-232 grade data cable is required to connect the DESA^{XL} DVR to the LTC 8016 Interface Unit. The interface cable must either be purchased locally, or constructed based on the pinouts in the *CONNECTOR AND CABLE PINOUTS Section*.

Connect one end of the RS-232 data cable to the end of the Watchdog/PTZ cable connected to the DESA's COM1 port, and the other end of the cable to the PC port on the Interface Unit.

5.0 TYPICAL CONFIGURATION DIAGRAMS

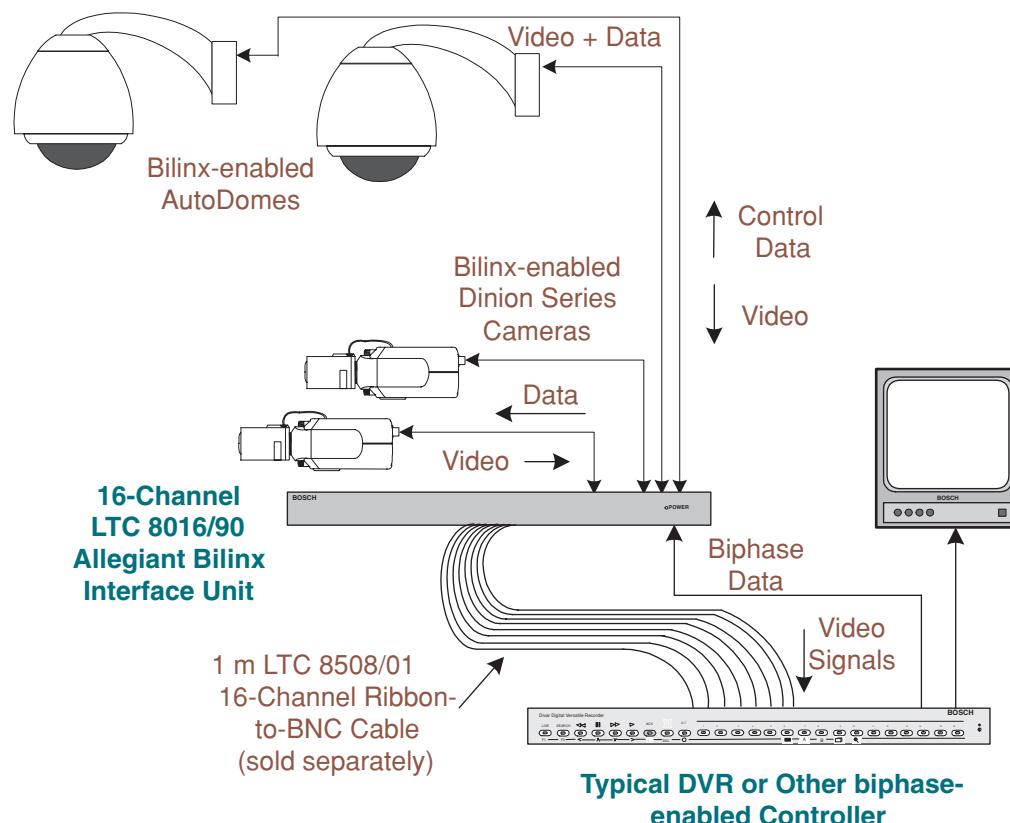


Figure 12 Typical Interface Unit Connected to DVR Control Unit

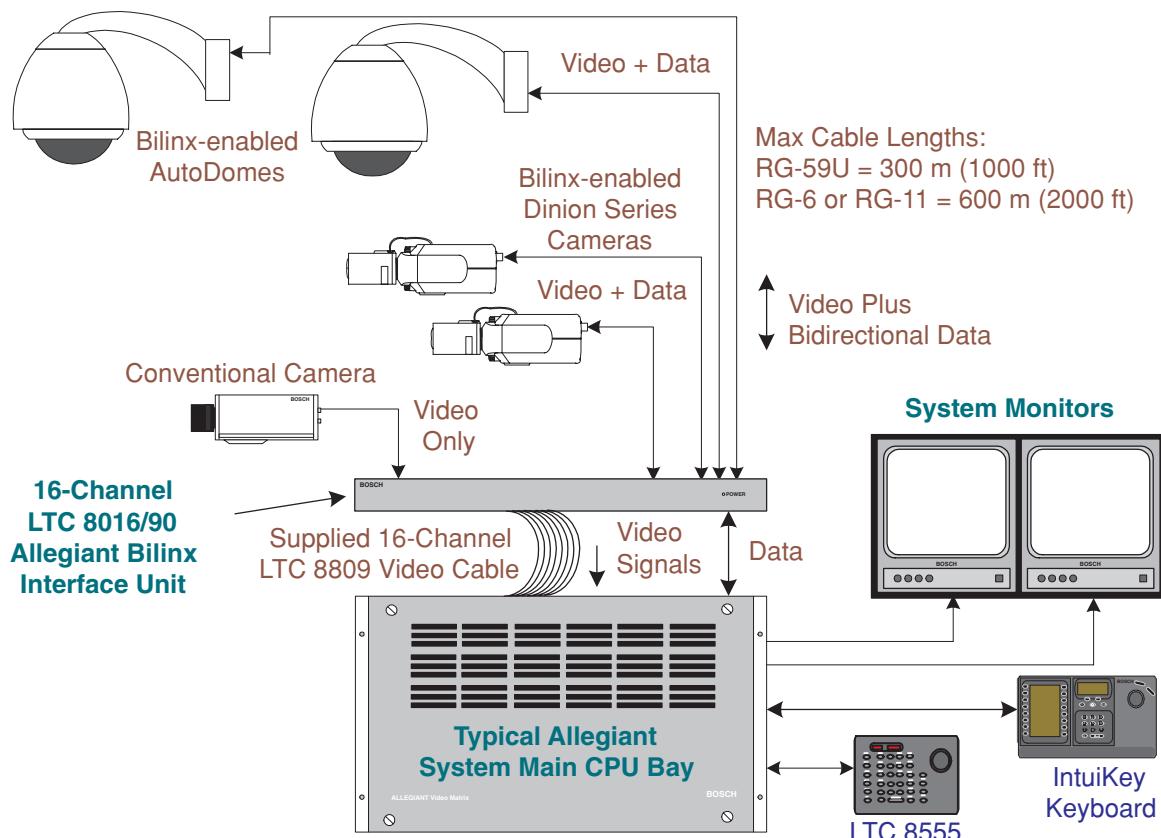


Figure 13 Typical Interface Unit Connected to Allegiant Switching System

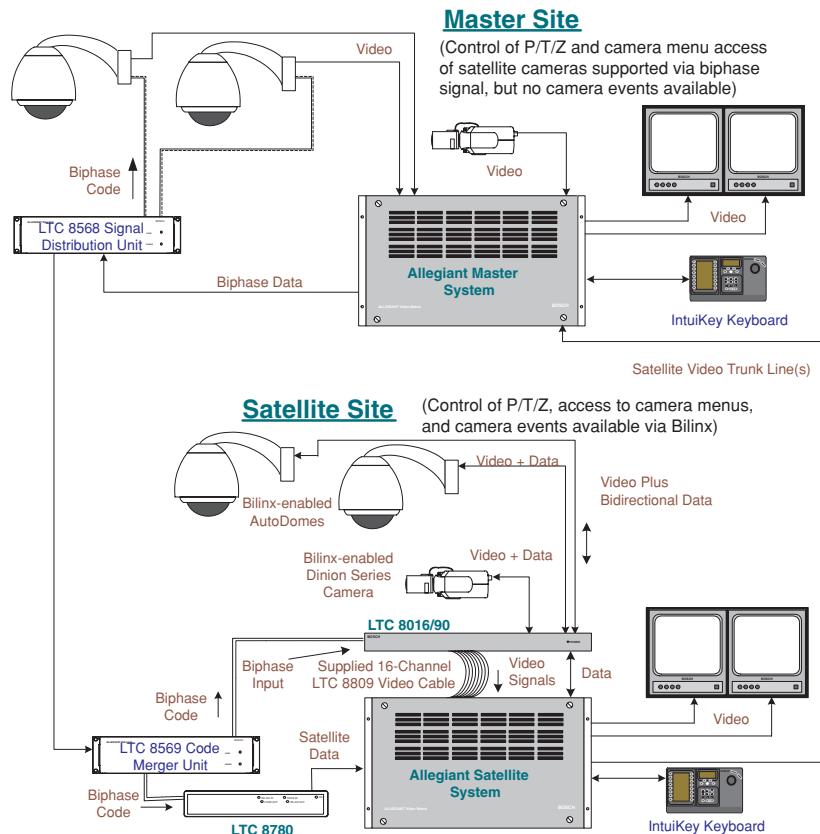


Figure 14 Interface Unit Used in Allegiant Satellite System Configuration

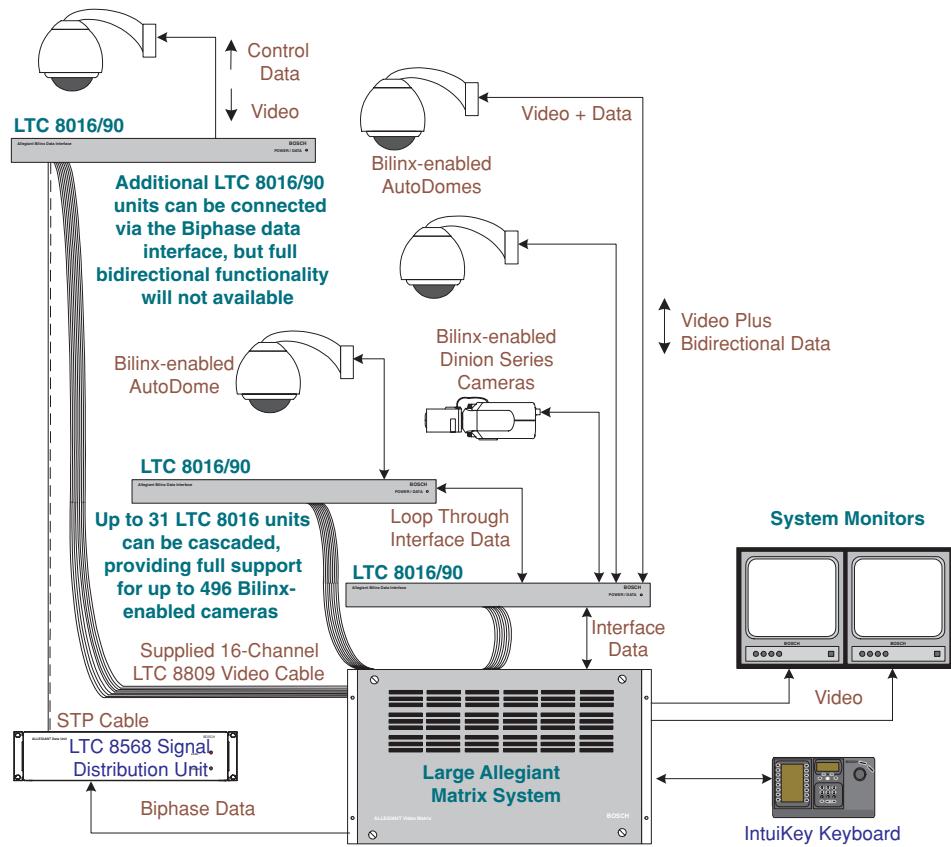


Figure 15 Large Allegiant System with Several Interface Units

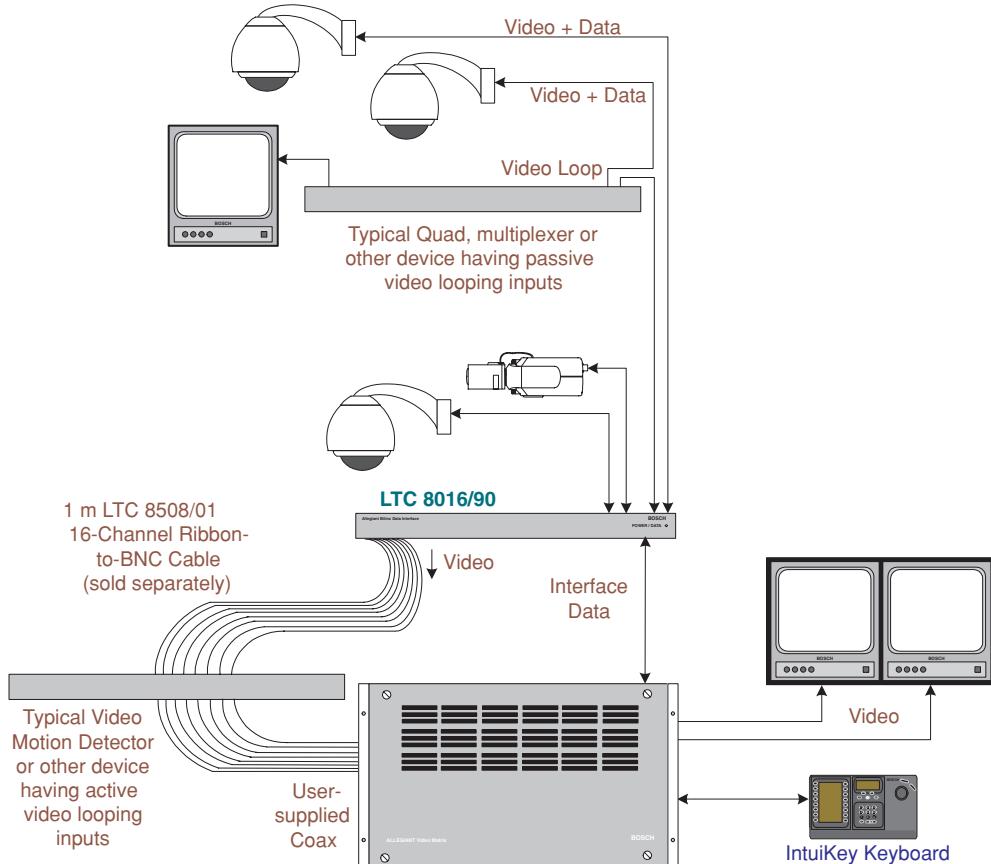


Figure 16 Recommended Configuration When Using Bilinx with Other Devices

6.0 OPERATION

Once installation is finished, operation of this unit is completely automatic. Refer to the applicable section of the manual supplied with the control device and/or camera for details regarding their features/functions.

The Interface Unit is designed to process camera contact alarm and motion event messages from cameras that support this functionality. The Interface Unit can also detect **Dark Alarm** signal conditions when the

video amplitude level drops below 15 IRE. When the Interface is connected to an Allegiant system using the Allegiant data interface, messages can be sent to the controller to notify the system of these events. By default, camera contact alarm input 1 will result in a standard Allegiant system alarm response, assuming an alarm response mode has been configured in the system. System responses to camera alarms 2 to 4, and the **Dark Alarm** require programming of the Allegiant system using the PC-based Allegiant LTC 8059 Master Control Software, version 2.7 or later.

7.0 DEVICE OUTLINE



Figure 17 Front Panel

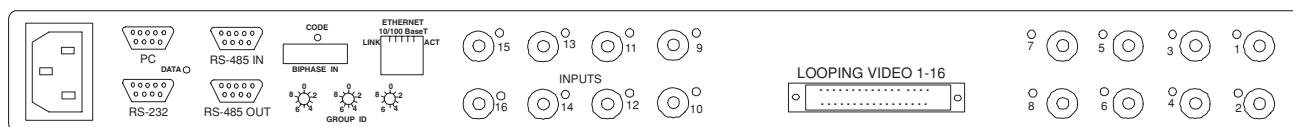


Figure 18 Rear Panel

8.0 CONNECTOR AND CABLE PINOUTS

8.1 LTC 8016 Connector Pinouts

| 6-Position CODE Connector ¹ | |
|--|-----------------|
| Pin | Connection |
| 1 | Shield |
| 2 | Biphase Data -- |
| 3 | Biphase Data + |
| 4 | Shield |
| 5 | Biphase Data -- |
| 6 | Biphase Data + |

¹Pins are not numbered; the numbers represent the pin sequence from left to right.

| 9-Pin RS-232 Connector | |
|------------------------|------------|
| Pin | Connection |
| 1 | Data Gnd |
| 2 | RTS |
| 3 | CTS |
| 4 | Tx |
| 5 | Rx |
| 6 | -- |
| 7 | Data Gnd |
| 8 | -- |
| 9 | -- |

| 9-Pin PC Connector | | |
|--------------------|------------|--------------------------|
| Pin | Connection | Old Pinouts ² |
| 1 | -- | -- |
| 2 | Rx | Tx |
| 3 | Tx | Rx |
| 4 | -- | -- |
| 5 | Data Gnd | Data Gnd |
| 6 | -- | -- |
| 7 | RTS | CTS |
| 8 | CTS | RTS |
| 9 | -- | -- |

²Pinouts used on units manufactured before July, 2004 (date code 0426).

| 9-Pin RS-485 IN Connectors | |
|----------------------------|------------|
| Pin | Connection |
| 1 | -- |
| 2 | TXD+ |
| 3 | TXD-- |
| 4 | RXD+ |
| 5 | RXD-- |
| 6 | -- |
| 7 | -- |
| 8 | -- |
| 9 | -- |

| 9-Pin RS-485 OUT Connectors | |
|-----------------------------|------------|
| Pin | Connection |
| 1 | -- |
| 2 | RXD+ |
| 3 | RXD-- |
| 4 | TXD+ |
| 5 | TXD-- |
| 6 | -- |
| 7 | -- |
| 8 | -- |
| 9 | -- |

8.2 Supplied Serial Data Cable Pinouts

| 9-Pin Male | 9-Pin Male |
|------------|------------|
| 1 | -- |
| 2 | 4 |
| 3 | 5 |
| 4 | 2 |
| 5 | 3 |
| 6 | -- |
| 7 | -- |
| 8 | -- |
| 9 | -- |

8.3 Miscellaneous Cables (Not supplied)

Bosch S1385 or Industry standard Null modem RS-232 Data Cable (Required if connecting the LTC 8016 directly to the COM port on PC)

| 9-Pin Female (PC COM Port) | 9-Pin Female ¹ (LTC 8016 PC) |
|----------------------------|---|
| 1,6 | 4 |
| 2 | 3 |
| 3 | 2 |
| 4 | 1,6 |
| 5 | 5 |
| 7 | 8 |
| 8 | 7 |
| 9 | -- |

¹The PC connector on units manufactured before July, 2004 (date code 0426) used a male 9-pin connector for this port.

Industry type straight through RS-232 Data Cable (Required if connecting the LTC 8016 to a Watchdog/PTZ connector on the DESA^{XL} DVR)

| 9-Pin Male (DVR COM Port) | 9-Pin Female ² (LTC 8016 PC Port) |
|---------------------------|--|
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |

²The PC connector on units manufactured before July, 2004 (date code 0426) used a male 9-pin connector for this port.

9-Pin to 9-Pin Serial Data Cable for Allegiant Alarm Port (Required if connecting the LTC 8016 to the Allegiant Alarm Port)

| 9-Pin Male (Alarm Port) | 9-Pin Male (LTC 8016 RS-232 Port) |
|-------------------------|-----------------------------------|
| 1 RTS | 3 CTS |
| 2 Tx | 5 Rx |
| 3 Chassis Gnd | -- |
| 4 Data Gnd | 1 Data Gnd |
| 5 Data Gnd | 7 Data Gnd |
| 6 Rx | 4 Tx |
| 7 CTS | 2 RTS |
| 8 No Connection | -- |
| 9 No Connection | -- |

9.0 MAINTENANCE

The Allegiant Bilinx Data Interface Unit does not require any special maintenance.

10.0 TROUBLESHOOTING

| Problem | Possible Cause and Solution |
|---|---|
| Complete lack of operation after installation | <p>a) Three to five seconds after being powered up, if no LEDs (on front and rear panel) indicate activity, verify that the AC power cord is connected, and the AC power source is energized.</p> <p>b) If some of the LEDs are active, refer to the <i>LED INDICATORS</i> Section below for additional information.</p> <p>c) The Interface Unit has been inadvertently set to Group ID 900 for more than 5 seconds. Set the Group ID to the correct setting and power off/on the Interface Unit to return it to its normal operating mode.</p> |
| No PTZ or menu access is possible on Bilinx-enabled camera | <p>a) If the Channel LED does not indicate Bilinx communication, verify that the camera is designed to support Bilinx communication. Refer to the <i>COMPATIBILITY INFORMATION</i> Section. The Video Input Channel LEDs can indicate whether the LTC 8016 is using Bilinx communication. Refer to the <i>LED INDICATORS</i> Section below for additional information.</p> <p>b) Verify that the Interface Unit is connected to the correct block of system video inputs based on the Group ID switch settings.</p> <p>c) The camera is located at a distance that exceeds Bilinx communication limits. Refer to the <i>CAMERA VIDEO CONNECTIONS</i> Section for maximum distance details.</p> <p>d) Up to 20 seconds may be required when a Bilinx-enabled camera is first connected to the Interface Unit before control is possible. No response before this time has elapsed should be considered normal.</p> |
| No video on control unit | <p>a) The Video interface cable from Interface Unit is not connected to the correct input of the control unit.</p> <p>b) The Interface Unit has not been connected to an AC power source.</p> |
| Erratic or no control of cameras when multiple Interface Units are in use | Verify that each Interface Unit is set to a unique Group ID number. |
| Smeared or double video images are present on controller output | Verify that a camera signal has not been connected to the looping output of a video channel on the control unit that's already in use by the Interface Unit. |

11.0 LED INDICATORS

The Allegiant Bilinx Data Interface Unit incorporates several LEDs that indicate various status conditions. These LEDs are helpful when troubleshooting a problem.

| LED | Description |
|--------------------------------------|--|
| Behavior ON steady | <p><u>Condition</u></p> <ul style="list-style-type: none"> The Interface Unit is operating normally, and has received the Allegiant's logical-to-physical camera table |
| FLASHING at 50% duty cycle | <ul style="list-style-type: none"> The Interface Unit is operating normally, but has not received the Allegiant's logical-to-physical camera table |
| FLASHING randomly | <ul style="list-style-type: none"> The Interface Unit is operating normally, and the LED is following the action of biphasic data being received |
| Video Input Channel Indicators | <p>The Channel LEDs indicate the status of the video input signal. A Channel LED behaves according to the following table:</p> |
| Behavior ON with occasional flash | <p><u>Condition</u></p> <ul style="list-style-type: none"> Indicates connection to a Bilinx-enabled camera |
| ON with rapid flashing | <ul style="list-style-type: none"> Indicates control of a Bilinx-enabled camera |
| OFF with rapid flashing | <ul style="list-style-type: none"> Indicates control of a Bilinx-enabled camera, but the video level is below acceptable limits, indicating a <i>Dark Alarm</i> condition |
| ON | <ul style="list-style-type: none"> Indication when connected to a non-Bilinx-enabled camera having an acceptable video level |
| OFF with flashing at 50% duty cycle | <ul style="list-style-type: none"> No video is present from a non-Bilinx-enabled camera, indicating a <i>Dark Alarm</i> condition |
| LINK LED | When illuminated, indicates that a valid physical connection exists between the Interface Unit and the RS-232 port of a controller unit. |
| DATA LED | Flashes to indicate that the Interface Unit is receiving valid data from a controller unit during serial communications. |
| CODE LED | Flashes to indicate that the Interface Unit is receiving biphasic data from a controller unit. |
| Ethernet port LINK & ACT LEDs | Not used in current implementation (reserved for future use). |

12.0 REPLACEMENT PARTS

| Description | Part Number |
|--|----------------------------|
| 16-Channel Video Ribbon Cable | LTC 8809/00 |
| 3 m (10 ft) Data Interface Cable | 303-2173-504 |
| Replacement AC Line Cord, 120 VAC | Source from local supplier |
| Replacement AC Line Cord, 220-240 VAC | Source from local supplier |
| 6-Position Terminal Block with 100Ω Terminating Resistor | 303-4118-506 |
| Offset Screwdriver | 303-4411-001 |

13.0 COMMON ACCESSORY PARTS

| Description | Part Number |
|---|-------------|
| 1 m (3 ft) 16-Channel Video Ribbon-to-BNC Cable | LTC 8508/01 |
| 32-Channel Video Interconnect Panel | LTC 8807/00 |
| Industry Standard Null Modem RS-232 Cable | S1385 |

APPENDIX A - Group ID Settings for Large Systems

| | | | | | | | | | | | | | |
|-----|--------------|-----|--------------|-----|--------------|-----|--------------|-----|--------------|-----|--------------|-----|----------------|
| 065 | 1025 to 1040 | 145 | 2305 to 2320 | 225 | 3585 to 3600 | 305 | 4865 to 4880 | 385 | 6145 to 6160 | 465 | 7425 to 7440 | 545 | 8705 to 8720 |
| 066 | 1041 to 1056 | 146 | 2321 to 2336 | 226 | 3601 to 3616 | 306 | 4881 to 4896 | 386 | 6161 to 6176 | 466 | 7441 to 7456 | 546 | 8721 to 8736 |
| 067 | 1057 to 1072 | 147 | 2337 to 2352 | 227 | 3617 to 3632 | 307 | 4897 to 4912 | 387 | 6177 to 6192 | 467 | 7457 to 7472 | 547 | 8737 to 8752 |
| 068 | 1073 to 1088 | 148 | 2353 to 2368 | 228 | 3633 to 3648 | 308 | 4913 to 4928 | 388 | 6193 to 6208 | 468 | 7473 to 7488 | 548 | 8753 to 8768 |
| 069 | 1089 to 1104 | 149 | 2369 to 2384 | 229 | 3649 to 3664 | 309 | 4929 to 4944 | 389 | 6209 to 6224 | 469 | 7489 to 7504 | 549 | 8769 to 8784 |
| 070 | 1105 to 1120 | 150 | 2385 to 2400 | 230 | 3665 to 3680 | 310 | 4945 to 4960 | 390 | 6225 to 6240 | 470 | 7505 to 7520 | 550 | 8785 to 8800 |
| 071 | 1121 to 1136 | 151 | 2401 to 2416 | 231 | 3681 to 3696 | 311 | 4961 to 4976 | 391 | 6241 to 6256 | 471 | 7521 to 7536 | 551 | 8801 to 8816 |
| 072 | 1137 to 1152 | 152 | 2417 to 2432 | 232 | 3697 to 3712 | 312 | 4977 to 4992 | 392 | 6257 to 6272 | 472 | 7537 to 7552 | 552 | 8817 to 8832 |
| 073 | 1153 to 1168 | 153 | 2433 to 2448 | 233 | 3713 to 3728 | 313 | 4993 to 5008 | 393 | 6273 to 6288 | 473 | 7553 to 7568 | 553 | 8833 to 8848 |
| 074 | 1169 to 1184 | 154 | 2449 to 2464 | 234 | 3729 to 3744 | 314 | 5009 to 5024 | 394 | 6289 to 6304 | 474 | 7569 to 7584 | 554 | 8849 to 8864 |
| 075 | 1185 to 1200 | 155 | 2465 to 2480 | 235 | 3745 to 3760 | 315 | 5025 to 5040 | 395 | 6305 to 6320 | 475 | 7585 to 7600 | 555 | 8865 to 8880 |
| 076 | 1201 to 1216 | 156 | 2481 to 2496 | 236 | 3761 to 3776 | 316 | 5041 to 5056 | 396 | 6321 to 6336 | 476 | 7601 to 7616 | 556 | 8881 to 8896 |
| 077 | 1217 to 1232 | 157 | 2497 to 2512 | 237 | 3777 to 3792 | 317 | 5057 to 5072 | 397 | 6337 to 6352 | 477 | 7617 to 7632 | 557 | 8897 to 8912 |
| 078 | 1233 to 1248 | 158 | 2513 to 2528 | 238 | 3793 to 3808 | 318 | 5073 to 5088 | 398 | 6353 to 6368 | 478 | 7633 to 7648 | 558 | 8913 to 8928 |
| 079 | 1249 to 1264 | 159 | 2529 to 2544 | 239 | 3809 to 3824 | 319 | 5089 to 5104 | 399 | 6369 to 6384 | 479 | 7649 to 7664 | 559 | 8929 to 8944 |
| 080 | 1265 to 1280 | 160 | 2545 to 2560 | 240 | 3825 to 3840 | 320 | 5105 to 5120 | 400 | 6385 to 6400 | 480 | 7665 to 7680 | 560 | 8945 to 8960 |
| 081 | 1281 to 1296 | 161 | 2561 to 2576 | 241 | 3841 to 3856 | 321 | 5121 to 5136 | 401 | 6401 to 6416 | 481 | 7681 to 7696 | 561 | 8961 to 8976 |
| 082 | 1297 to 1312 | 162 | 2577 to 2592 | 242 | 3857 to 3872 | 322 | 5137 to 5152 | 402 | 6417 to 6432 | 482 | 7697 to 7712 | 562 | 8977 to 8992 |
| 083 | 1313 to 1328 | 163 | 2593 to 2608 | 243 | 3873 to 3888 | 323 | 5153 to 5168 | 403 | 6433 to 6448 | 483 | 7713 to 7728 | 563 | 8993 to 9008 |
| 084 | 1329 to 1344 | 164 | 2609 to 2624 | 244 | 3889 to 3904 | 324 | 5169 to 5184 | 404 | 6449 to 6464 | 484 | 7729 to 7744 | 564 | 9009 to 9024 |
| 085 | 1345 to 1360 | 165 | 2625 to 2640 | 245 | 3905 to 3920 | 325 | 5185 to 5200 | 405 | 6465 to 6480 | 485 | 7745 to 7760 | 565 | 9025 to 9040 |
| 086 | 1361 to 1376 | 166 | 2641 to 2656 | 246 | 3921 to 3936 | 326 | 5201 to 5216 | 406 | 6481 to 6496 | 486 | 7761 to 7776 | 566 | 9041 to 9056 |
| 087 | 1377 to 1392 | 167 | 2657 to 2672 | 247 | 3937 to 3952 | 327 | 5217 to 5232 | 407 | 6497 to 6512 | 487 | 7777 to 7792 | 567 | 9057 to 9072 |
| 088 | 1393 to 1408 | 168 | 2673 to 2688 | 248 | 3953 to 3968 | 328 | 5233 to 5248 | 408 | 6513 to 6528 | 488 | 7793 to 7808 | 568 | 9073 to 9088 |
| 089 | 1409 to 1424 | 169 | 2689 to 2704 | 249 | 3969 to 3984 | 329 | 5249 to 5264 | 409 | 6529 to 6544 | 489 | 7809 to 7824 | 569 | 9089 to 9104 |
| 090 | 1425 to 1440 | 170 | 2705 to 2720 | 250 | 3985 to 4000 | 330 | 5265 to 5280 | 410 | 6545 to 6560 | 490 | 7825 to 7840 | 570 | 9105 to 9120 |
| 091 | 1441 to 1456 | 171 | 2721 to 2736 | 251 | 4001 to 4016 | 331 | 5281 to 5296 | 411 | 6561 to 6576 | 491 | 7841 to 7856 | 571 | 9121 to 9136 |
| 092 | 1457 to 1472 | 172 | 2737 to 2752 | 252 | 4017 to 4032 | 332 | 5297 to 5312 | 412 | 6577 to 6592 | 492 | 7857 to 7872 | 572 | 9137 to 9152 |
| 093 | 1473 to 1488 | 173 | 2753 to 2768 | 253 | 4033 to 4048 | 333 | 5313 to 5328 | 413 | 6593 to 6608 | 493 | 7873 to 7888 | 573 | 9153 to 9168 |
| 094 | 1489 to 1504 | 174 | 2769 to 2784 | 254 | 4049 to 4064 | 334 | 5329 to 5344 | 414 | 6609 to 6624 | 494 | 7889 to 7904 | 574 | 9169 to 9184 |
| 095 | 1505 to 1520 | 175 | 2785 to 2800 | 255 | 4065 to 4080 | 335 | 5345 to 5360 | 415 | 6625 to 6640 | 495 | 7905 to 7920 | 575 | 9185 to 9200 |
| 096 | 1521 to 1536 | 176 | 2801 to 2816 | 256 | 4081 to 4096 | 336 | 5361 to 5376 | 416 | 6641 to 6656 | 496 | 7921 to 7936 | 576 | 9201 to 9216 |
| 097 | 1537 to 1552 | 177 | 2817 to 2832 | 257 | 4097 to 4112 | 337 | 5377 to 5392 | 417 | 6657 to 6672 | 497 | 7937 to 7952 | 577 | 9217 to 9232 |
| 098 | 1553 to 1568 | 178 | 2833 to 2848 | 258 | 4113 to 4128 | 338 | 5393 to 5408 | 418 | 6673 to 6688 | 498 | 7953 to 7968 | 578 | 9233 to 9248 |
| 099 | 1569 to 1584 | 179 | 2849 to 2864 | 259 | 4129 to 4144 | 339 | 5409 to 5424 | 419 | 6689 to 6704 | 499 | 7969 to 7984 | 579 | 9249 to 9264 |
| 100 | 1585 to 1600 | 180 | 2865 to 2880 | 260 | 4145 to 4160 | 340 | 5425 to 5440 | 420 | 6705 to 6720 | 500 | 7985 to 8000 | 580 | 9265 to 9280 |
| 101 | 1601 to 1616 | 181 | 2881 to 2896 | 261 | 4161 to 4176 | 341 | 5441 to 5456 | 421 | 6721 to 6736 | 501 | 8001 to 8016 | 581 | 9281 to 9296 |
| 102 | 1617 to 1632 | 182 | 2897 to 2912 | 262 | 4177 to 4192 | 342 | 5457 to 5472 | 422 | 6737 to 6752 | 502 | 8017 to 8032 | 582 | 9297 to 9312 |
| 103 | 1633 to 1648 | 183 | 2913 to 2928 | 263 | 4193 to 4208 | 343 | 5473 to 5488 | 423 | 6753 to 6768 | 503 | 8033 to 8048 | 584 | 9329 to 9344 |
| 104 | 1649 to 1664 | 184 | 2929 to 2944 | 264 | 4209 to 4224 | 344 | 5489 to 5504 | 424 | 6769 to 6784 | 504 | 8049 to 8064 | 585 | 9345 to 9360 |
| 105 | 1665 to 1680 | 185 | 2945 to 2960 | 265 | 4225 to 4240 | 345 | 5505 to 5520 | 425 | 6785 to 6800 | 505 | 8065 to 8080 | 586 | 9361 to 9376 |
| 106 | 1681 to 1696 | 186 | 2961 to 2976 | 266 | 4241 to 4256 | 346 | 5521 to 5536 | 426 | 6801 to 6816 | 506 | 8081 to 8096 | 587 | 9377 to 9392 |
| 107 | 1697 to 1712 | 187 | 2977 to 2992 | 267 | 4257 to 4272 | 347 | 5537 to 5552 | 427 | 6817 to 6832 | 507 | 8097 to 8112 | 588 | 9393 to 9408 |
| 108 | 1713 to 1728 | 188 | 2993 to 3008 | 268 | 4273 to 4288 | 348 | 5553 to 5568 | 428 | 6833 to 6848 | 508 | 8113 to 8128 | 589 | 9409 to 9424 |
| 109 | 1729 to 1744 | 189 | 3009 to 3024 | 269 | 4289 to 4304 | 349 | 5569 to 5584 | 429 | 6849 to 6864 | 509 | 8129 to 8144 | 590 | 9425 to 9440 |
| 110 | 1745 to 1760 | 190 | 3025 to 3040 | 270 | 4305 to 4320 | 350 | 5585 to 5600 | 430 | 6865 to 6880 | 510 | 8145 to 8160 | 591 | 9441 to 9456 |
| 111 | 1761 to 1776 | 191 | 3041 to 3056 | 271 | 4321 to 4336 | 351 | 5601 to 5616 | 431 | 6881 to 6896 | 511 | 8161 to 8176 | 592 | 9457 to 9472 |
| 112 | 1777 to 1792 | 192 | 3057 to 3072 | 272 | 4337 to 4352 | 352 | 5617 to 5632 | 432 | 6897 to 6912 | 512 | 8177 to 8192 | 593 | 9473 to 9488 |
| 113 | 1793 to 1808 | 193 | 3073 to 3088 | 273 | 4353 to 4368 | 353 | 5633 to 5648 | 433 | 6913 to 6928 | 513 | 8193 to 8208 | 594 | 9489 to 9504 |
| 114 | 1809 to 1824 | 194 | 3089 to 3104 | 274 | 4369 to 4384 | 354 | 5649 to 5664 | 434 | 6929 to 6944 | 514 | 8209 to 8224 | 595 | 9505 to 9520 |
| 115 | 1825 to 1840 | 195 | 3105 to 3120 | 275 | 4385 to 4400 | 355 | 5665 to 5680 | 435 | 6945 to 6960 | 515 | 8225 to 8240 | 596 | 9521 to 9536 |
| 116 | 1841 to 1856 | 196 | 3121 to 3136 | 276 | 4401 to 4416 | 356 | 5681 to 5696 | 436 | 6961 to 6976 | 516 | 8241 to 8256 | 597 | 9537 to 9552 |
| 117 | 1857 to 1872 | 197 | 3137 to 3152 | 277 | 4417 to 4432 | 357 | 5697 to 5712 | 437 | 6977 to 6992 | 517 | 8257 to 8272 | 598 | 9553 to 9568 |
| 118 | 1873 to 1888 | 198 | 3153 to 3168 | 278 | 4433 to 4448 | 358 | 5713 to 5728 | 438 | 6993 to 7008 | 518 | 8273 to 8288 | 599 | 9569 to 9584 |
| 119 | 1889 to 1904 | 199 | 3169 to 3184 | 279 | 4449 to 4464 | 359 | 5729 to 5744 | 439 | 7009 to 7024 | 519 | 8289 to 8304 | 600 | 9585 to 9600 |
| 120 | 1905 to 1920 | 200 | 3185 to 3200 | 280 | 4465 to 4480 | 360 | 5745 to 5760 | 440 | 7025 to 7040 | 520 | 8305 to 8320 | 601 | 9601 to 9616 |
| 121 | 1921 to 1936 | 201 | 3201 to 3216 | 281 | 4481 to 4496 | 361 | 5761 to 5776 | 441 | 7041 to 7056 | 521 | 8321 to 8336 | 602 | 9617 to 9632 |
| 122 | 1937 to 1952 | 202 | 3217 to 3232 | 282 | 4497 to 4512 | 362 | 5777 to 5792 | 442 | 7057 to 7072 | 522 | 8337 to 8352 | 603 | 9633 to 9648 |
| 123 | 1953 to 1968 | 203 | 3233 to 3248 | 283 | 4513 to 4528 | 363 | 5793 to 5808 | 443 | 7073 to 7088 | 523 | 8353 to 8368 | 604 | 9649 to 9664 |
| 124 | 1969 to 1984 | 204 | 3249 to 3264 | 284 | 4529 to 4544 | 364 | 5809 to 5824 | 444 | 7089 to 7104 | 524 | 8369 to 8384 | 605 | 9665 to 9680 |
| 125 | 1985 to 2000 | 205 | 3265 to 3280 | 285 | 4545 to 4560 | 365 | 5825 to 5840 | 445 | 7105 to 7120 | 525 | 8385 to 8400 | 606 | 9681 to 9696 |
| 126 | 2001 to 2016 | 206 | 3281 to 3296 | 286 | 4561 to 4576 | 366 | 5841 to 5856 | 446 | 7121 to 7136 | 526 | 8401 to 8416 | 607 | 9697 to 9712 |
| 127 | 2017 to 2032 | 207 | 3297 to 3312 | 287 | 4577 to 4592 | 367 | 5857 to 5872 | 447 | 7137 to 7152 | 527 | 8417 to 8432 | 608 | 9713 to 9728 |
| 128 | 2033 to 2048 | 208 | 3313 to 3328 | 288 | 4593 to 4608 | 368 | 5873 to 5888 | 448 | 7153 to 7168 | 528 | 8433 to 8448 | 609 | 9729 to 9744 |
| 129 | 2049 to 2064 | 209 | 3329 to 3344 | 289 | 4609 to 4624 | 369 | 5889 to 5904 | 449 | 7169 to 7184 | 529 | 8449 to 8464 | 610 | 9745 to 9760 |
| 130 | 2065 to 2080 | 210 | 3345 to 3360 | 290 | 4625 to 4640 | 370 | 5905 to 5920 | 450 | 7185 to 7200 | 530 | 8465 to 8480 | 611 | 9761 to 9776</ |

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